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BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte JULIE W. DREW, QI FENG, and BIN ZHANG

Appeal 2015-002328
Application 11/083,576
Technology Center 3600

Before MICHAEL W. KIM, PHILIP J. HOFFMANN, and ROBERT J. SILVERMAN, *Administrative Patent Judges*.

KIM, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF CASE

This is an appeal from the Final rejection of claims 8–11, 17–19, and 23–31 mailed June 13, 2014.[1] We have jurisdiction to review the case under 35 U.S.C. §§ 134 and 6.

The invention relates generally to managing a product portfolio offered for sale by reducing the number of products included in a portfolio to a set expected to increase the business' profit. Spec. 1 and 10.

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[1] Claims 1–7, 12–16, and 20–22 are cancelled.

Independent claim 8 is illustrative:

> 8. A method executed by a computer for selecting products for a product portfolio, comprising:
>
> identifying, by the computer, a set of customer orders including a set of ordered products, and a total order benefit;
>
> identifying, by the computer, subsets of the customer orders each having a corresponding subset order benefit;
>
> generating, by the computer, a linear function for each of the identified subsets of the customer orders, the linear functions being based on a penalty multiplier, the linear function for each subset being generated by subtracting from the corresponding subset order benefit a value that is derived from the penalty multiplier (λ) multiplied by a number of products in the subset;
>
> finding, by the computer, selected ones of the subsets of customer orders which form part of an upper envelope for the linear functions generated; and
>
> selecting, by the computer, the products in the selected subsets of customer orders that form part of the upper envelope for the product portfolio, wherein the total order benefit and the subset order benefit are selected from among revenue, profit, and number of orders covered.

Claims 8, 10, 17, 23, 26, 29, and 30 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Marsten (US 8,078,489 B1, iss. Dec. 13, 2011) and Marshall L. Fisher, *An Applications Oriented Guide to Lagrangian Relaxation*, Interfaces 15, Department of Decision Sciences, The Wharton School, University of Pennsylvania, 10–21 (March–April 1985) (hereinafter "Fisher"). Final Act. 9.

Claims 9, 11, 18, 19, 24, 25, 27, 28, and 31 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Marsten, Fisher, and Dorit S. Hochbaum, *Selection, Provisioning, Shared Fixed Costs, Maximum Closure, and Implications on Algorithmic Methods Today*, Department of Industrial Engineering and Operations Research and Walter A. Haas School of

Business, University of California, Berkeley, (March 14, 2004) (hereinafter "Hochbaum").

Claims 8–11, 17–19, and 23–31 are rejected under 35 U.S.C. § 101 for failing to recite statutory subject matter.[2]

We AFFIRM.

ANALYSIS

Rejections Under 35 U.S.C. § 103 of Claims 8, 10, 17, 23, 26, 29, and 30

The Appellants contend that the combination of Marsten and Fisher fails to account for "finding, by the computer, selected ones of the subsets of customer orders which form part of an upper envelope for the linear functions generated," as recited in independent claim 8 and similarly recited in each of independent claims 17 and 29. More specifically, the Appellants assert that "the sets depicted in Fig. 34 of Marsten are sets of different types of configurations of products" that refer to a combination of features of a product, and are not subsets of customer orders, as claimed. App. Br. 9. In more practical terms, the Appellants assert that Marsten's "configurations for which there is customer demand" cannot correspond properly to the recited "customer orders." Reply Br. 8–9. The Examiner responds and asserts that Fig. 34 teaches a subset of customer orders in the form of set C which is composed of "[a]ll customer ordered configurations." Ans. 5–6 (citing Marsten Fig. 34); *see also* Marsten 27:10–41.

[2] The rejection of claims 8–11, 17–19, and 23–31 under 35 U.S.C. § 101 was entered as a new grounds of rejection in the Examiner's Answer, mailed October 27, 2014. Ans. 3–5.

We are not persuaded by the Appellants' argument that Marsten does account adequately for the recited "customer orders." The Appellants take the position that Marsten's described "configuration for which there is demand" is different from Marsten's "ordered product," and that only the latter can, at best, correspond to the claimed "customer orders." Reply Br. 8–9. We see no such distinction because Marsten's demanded configuration represents an order for a particular configuration of a product. Marsten 27:10–41; *see also* Ans. 7. Marsten makes this equivalence explicit while explaining Figure 34 using the example of a tractor where "V contains 2832 configurations and C contains the 713 of those 2832 that have a customer demand of at least one tractor." Marsten 27:28–31; *see also* Ans. 6. Hence, we find that Marsten discloses that there is demand for 713 tractors with differing configurations, each of which represent an actual ordered product. Ans. 6.

The Appellants further argue that "Fisher does not provide any teaching or hint of finding selected ones of the subsets of customer orders which form part of an upper envelope for the linear functions that are generated in the 'generating' clause of claim 8." App. Br. 11–13. Specifically, the Appellants assert that "nowhere in Fisher is there any reference to customer orders, or subsets of customer orders." *Id.* at 11. The Appellants' arguments are misplaced because, as noted above, we find that Marsten teaches the claimed "customer orders," and the Appellants have not explained sufficiently why the Examiner's additional finding that Marsten further teaches the "subsets of" those "customer orders," as required by the claims, is inadequate. Final Act. 9–10; *see also* Ans. 5–8; *Ex parte Frye*, Appeal 2009-006013, 2010 WL 889747 *3–4 (BPAI Feb. 26, 2010)

(precedential) ("If an appellant fails to present arguments on a particular issue – or, more broadly, on a particular rejection – the Board will not, as a general matter, unilaterally review those uncontested aspects of the rejection.").

For these reasons, we sustain the rejections of independent claims 8, 17, and 29, as well as claims 10, 23, 26, and 30 dependent therefrom.

Rejections Under 35 U.S.C. § 103 of Claims 9, 11, 18, 19, 24, 25, 27, 28, and 31

The Appellants contend that the combination of Marsten, Fisher, and Hochbaum fails to account adequately for "performing a binary search that uses the penalty multiplier for each of the identified subsets to determine if the corresponding identified subset forms part of the upper envelope," as recited in independent claim 9, and similarly recited in independent claim 18. App. Br. 13–15. Specifically, Appellants argue that "there is nothing in Hochbaum that indicates that its binary search is a binary search that uses the penalty multiplier for each of the identified subsets of customer orders to determine if the corresponding identified subset of customer orders forms part of the upper envelope." *Id.* at 13. The Examiner responds and asserts that Hochbaum teaches "a method for finding a collection of sets so that their benefit minus the cost of the elements in their union is maximized" and further teaches "[t]he algorithm requires at each iteration finding the integer minima of the convex functions which is accomplished with binary search in the O(nlogU) steps." Ans. 11 (citing Hochbaum 2, 8).

We find the Appellants' argument to be persuasive. The Examiner relies on two sections of Hochbaum, which separately disclose performing a convex function using a binary search, and applying a cost when

determining a collection of sets. Ans. 11. While those sections of Hochbaum may disclose performing a binary search, the Examiner has not shown adequately that the binary search of Hochbaum is performed *using a penalty multiplier*, as required by the claim. App. Br. 14. Presumably the Examiner intended some number from Marsten or Fisher to correspond to the recited "penalty multiplier" in order to meet the claim limitation, however, the Examiner has not identified any such variable(s) in those references. For these reasons, we do not sustain the rejection of independent claims 9 and 18. We similarly do not sustain the rejection of claims 11 and 19, which depend upon independent claims 9 and 18, respectively.

The Appellants further contend, using the same rationale as noted above in the discussion of independent claim 9, that the combination of Marsten, Fisher, and Hochbaum fails account adequately for "performing a binary search to determine which of the identified subsets form part of the upper envelope," as recited in independent claim 28 and similarly recited in independent claim 31. App. Br. 16. Independent claims 28 and 31 each require performing a binary search, but differ from independent claim 9 in that a penalty multiplier is not recited. As stated above, we determined that the combination of Marsten, Fisher, and Hochbaum accounts properly for performing a binary search to determine which of the identified subsets form part of the upper envelope. Accordingly, we sustain the rejection of independent claims 28 and 31.

Rejection Under 35 U.S.C. § 101

The Examiner asserts that claims 8–11, 17–19, and 23–31 do not recite statutory-eligible subject matter, in that the claims are directed to the abstract idea of "selecting the products in the selected subsets of customer

orders that form part of an upper envelope for the product portfolio." Ans. 3–5. The Answer then applies the second step of the *Alice* analytical framework and concludes that claims 8–11, 17–19, and 23–31 contain no meaningful limitations that transform it into a patent-eligible application of the abstract idea, nor do they produce any material object, improve any technology or technical field, or improve the functioning of the computer itself. *Id.* at 4; s*ee also Alice Corp. Pty. Ltd. v. CLS Bank Int'l*, 134 S.Ct. 2347, 2355 (2014).

We have analyzed independent claims 8, 17, and 29, and determine that the Examiner's identified concept is reasonable and is directed to a patent-ineligible abstract idea. *See OIP Techs., Inc. v. Amazon.com, Inc.*, 788 F.3d 1359, 1361–62 (Fed. Cir. 2015) (finding a method comprising: (1) testing prices; (2) gathering statistics about how customers reacted to the prices; (3) using that data to estimate outcomes; and (4) acting on estimated outcomes (i.e., automatically selecting and offering new prices based on estimated outcome) to be directed to the abstract idea of price optimization.).

The Appellants first argue that the present invention is distinguishable from the invention in *Alice* because it is "inventive" and, thus, would not qualify as "a fundamental economic practice that is 'long prevalent in our system of commerce.'" Reply Br. 2, 3. Concerning the "inventive" argument, as an initial matter, we are unclear if "inventiveness" alone has a proper place in a subject matter eligibility analysis. And in any case, we are not persuaded for at least the reasons set forth *supra*, in that we determined that we are unpersuaded of Examiner error that at least independent claims

8, 17, and 28–31 are neither novel nor non-obvious.[3] Concerning whether the claims are directed to a "fundamental economic practice," that line of argument is foreclosed by our reviewing court's decision referenced above.

We also are not persuaded by the Appellants' argument that independent claim 8 does not recite an abstract idea, because the "selecting" clause of independent claim 8 recites a computer, and the products selected by the computer are physical objects. Reply Br. 3. The recitation of a computer in independent claim 8, at best, suggests a nominal use of a general purpose computer and imposes no meaningful limits on the scope of the claim. *See Dealertrack, Inc. v. Huber*, 674 F.3d 1315, 1333–1334 (Fed. Cir. 2012) ("Simply adding a 'computer aided' limitation to a claim covering an abstract concept, without more, is insufficient to render the claim patent eligible"). Further, while the claimed orders may represent physical products, the claimed invention is merely a computer implemented method of manipulating hypothetical orders in the abstract.

Finally, the Appellants argue that even if independent claim 8 is directed to an abstract idea, independent claim 8 recites "additional subject matter that supplies the 'inventive concept' sufficient to transform the claimed invention into a patent-eligible application." Reply Br. 4. Specifically, the Appellants identify the following subject matter as amounting to significantly more than the ineligible abstract concept:

> identifying, by the computer, a set of customer orders including a set of ordered products, and a total order benefit;

[3] The outcome of the obviousness rejection with respect to independent claims 9 and 18 is not dispositive, given that the Examiner's determination of what the claims are "directed to" does not recite the "penalty multiplier."

> identifying, by the computer, subsets of the customer orders each having a corresponding subset order benefit;
>
> generating, by the computer, a linear function for each of the identified subsets of the customer orders, the linear functions being based on a penalty multiplier, the linear function for each subset being generated by subtracting from the corresponding subset order benefit a value that is derived from the penalty multiplier (λ) multiplied by a number of products in the subset;
>
> finding, by the computer, selected ones of the subsets of customer orders which form part of an upper envelope for the linear functions generated; and
>
> selecting, by the computer, the products in the selected subsets of customer orders that form part of the upper envelope for the product portfolio, wherein the total order benefit and the subset order benefit are selected from among revenue, profit, and number of orders covered.

Id. at 4–5. The Appellants assert that the "selecting clause" supplies "an inventive concept 'in the physical realm of things' that provides a 'new and useful application' of the claimed subject matter to the physical realm." *Id.* at 5. We are unpersuaded, as we discern nothing in the subject matter claimed that transforms the abstract idea of product portfolio optimization into "significantly more." We agree with the Examiner that the claim elements highlighted by the Appellants amount to no more than "generic" computer data processing functionality used to implement a mathematical business algorithm. *See buySAFE, Inc. v. Google, Inc.*, 765 F.3d 1350, 1355 (Fed. Cir. 2014).

For these reasons, we sustain the rejections of claims 8–11, 17–19, and 23–31 under 35 U.S.C. § 101.

DECISION

We AFFIRM the rejections of claims 8, 10, 17, and 23–31 under 35 U.S.C. § 103.

We REVERSE the rejections of claims 9, 11, 18, and 19 under 35 U.S.C. § 103.

We AFFIRM the rejections of claims 8–11, 17–19, and 23–31 under 35 U.S.C. § 101.

AFFIRMED